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ABSTRACT

Products and materials are provided from an Oregon project to define "new" and "changing" occupations for which training programs are needed and to determine guidelines to document "evidence of need." The legislative reference is addressed and pertinent literature is reviewed. Developed to establish the level of need of individual training programs or changes in existing programs, the guidelines begin with the definitions of new and changing occupations. They are designed to be adaptable to all agencies in planning occupation-oriented education and training, including community colleges, Comprehensive Employment and Training Act, higher education, apprenticeship, and proprietary school programs. Presented in outline form with detailed explanation following, guidelines cover these topics: occupational description, brief description of training required, employment projections, factors supporting employment projections, occupational characteristics, employee characteristics, and sources of information. Appendixes, amounting to approximately two-thirds of the report, include three examples of the guidelines in use for interpreter for the deaf, work processing specialist, and software technician; concept paper; subcommittee minutes; national compilation of new and emerging occupations; and bibliography. (YLB)

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NEW AND CHANGING OCCUPATIONS

Documenting "Evidence of Need"
for New Occupational Training Programs
and Changes in Existing Occupational Training Programs

by James E. Stembridge, Jr.

August 1981

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TABLE OF CONTENTS

	Page
Introduction	3
Legislative Reference	5
Literature Review	7
"Evidence of Need" Guidelines	13
Definitions	
Outline	
Explanation	
Glossary	
Appendices	
1. Example 1 "Interpreter for the Deaf"	25
2. Example 2 "Word Processing Specialist"	37
3. Example 3 "Software Technician"	47
4. Original Concept Paper	53
5. Subcommittee & List of Reviewers	55
6. Subcommittee Minutes	56
7. Program Approval Process-- Community College Example	61
8. New Occupations: National Compilation	63
9. References	65

Introduction

Preparing individuals with needed occupational skills is critical for our economy and essential for our society. Providing occupational training is a responsibility shared by employers, community colleges, CETA, higher education, apprenticeship, high schools, proprietary schools, and other agencies and institutions, both public and private.

To do their jobs most efficiently, planners and administrators of these education and training programs need to respond rapidly to changing developments in industry. This can be accomplished by improving the linkage between instructional/training programs and occupational skill needs. The over-riding goals are to make sure people receive training in needed skills for needed occupations, and to make sure Oregon's economy is supplied with the skilled workers necessary to keep our industries healthy and competitive in the national and international marketplace.

In order to carry out these responsibilities, planners and administrators should be able to identify the best relevant occupational information available. They should be able to use occupational information in verifying needs and to developing training program plans and proposals.

In the past, however, differing perceptions of what is adequate evidence of "need" have occasionally led to problems in the program planning and approval process. This has been especially true when an occupation is so new that adequate demand data have not yet been developed through existing employment statistics programs. For example, an occupation thought to be "new" to the state may actually be just a change in job title involving a slight modification in job duties brought about by a new piece of equipment.

As Dr. James E. Seitz has pointed out,

> "Too frequently, planners develop and implement programs on the basis of personal preference. Some perform in a manner similar to the faculty member whose penchant for his "pet" subject eventually leads to another offering. It is probably a rare catalog which contains none of such programs and courses--the broader needs of institution, consitutency, and clientele often being ignored or relegated to second-order importance.
>
> Other planners seem to proceed on the premise that what was good before or elsewhere is good at this point in time and place. That the situation will warrant the same kinds of programs may or may not be true.
>
> Still others have their imagination and fancy captured by fadism. The more unique, unusual, and seemingly innovative a program is the more desirable it seems to be. ...And what could be more unjust than to lead an individual through an intensive program of study which inherently promises occupational proficiency when there is no real occupation or related employment to be had upon its conclusion?"

As part of its mandate to "help users understand and utilize occupational data in decision-making", the Oregon Occupational Information Coordinating Committee (OOICC) originated and conducted this study of new and changing occupations. Project staff was provided under contract with the Research and Statistics section of the Employment Division.

During spring 1981, OOICC and representatives of its affiliate agencies agreed on definitions and suggested procedures to help streamline the process of identifying new occupations for which training programs are needed, as well as changing occupations (occupations changing enough to warrant modifications in training procedures). The primary products are definitions of "new" and "changing" occupations and a set of guidelines for documenting "evidence of need." The definitions and guidelines are designed to be adaptable to all agencies involved in planning occupation-oriented education and training, including community college, CETA, higher education, apprenticeship, and proprietary school programs.

Legislative Reference

The terms "new", "emerging", and "changing" appear (or are clearly implied) in several places within the 1976 revisions of the Vocational Education Act of 1963:

"Title I : VOCATIONAL EDUCATION

Part A: State Vocational Education Programs
"General Application"

Sec. 106: (a) Any state desiring to receive the amount for which it is eligible for any fiscal year pursuant to this Act shall, through its State board, submit to, and maintain on file with, the Commissioner a general application providing assurances--

(5) (A) that the State shall, in considering the approval of (such) applications, give priority to those applications which--

(ii) propose programs which are new to the area to be served and which are designed to meet new and emerging manpower needs and job opportunities in the area and, where relevant, in the State and the Nation.

Sec. 123: Energy Education
Funds...may be used (to fund) programs related to applications of solar energy.

Sec. 131: (a) Research: Funds available to the States may be used for...program improvements involving--
(3) ...new curriculum materials for new and emerging job fields,...
(4) projects in the development of new careers and occupations, such as--
(A) research and experimental projects designed to identify new careers in such fields as mental and physical health, crime prevention and correction, welfare, education, municipal services, child care, and recreation, requiring less training than professional positions,

Sec. 133: Curriculum Development--Funds...may be used for...
(1) the development and dissemination of vocational education curriculum materials for new and changing occupational fields..."

Literature Review

The earliest recognized publication devoted to the subject is the 1976 "Identifying and Planning for New and Emerging Occupations: A Suggested Guide" done by the Contract Research Corporation for the U. S. Office of Education. Paulette Meleen is the lead author. The guide documents the development and application of a process for identifying new and emerging occupations, based on the following definition:

> "A new and emerging occupation is one:
> --which has come into existence in the past ten years in skilled and technical areas,
> --for which there is: an established demand (2000 + annual openings nationally),
> a basis for projecting growth, and
> a shortage of trained labor,
> --for which no public vocational training is available, and
> --which requires a minimum of two months for upgrading, six months for a new trainee, and maximum of two years' preparation."

Eleven occupations that appear to meet these criteria at the national level are discussed in the publication. They are listed in Appendix 8 of this report.

In his 1977 Technical Education Yearbook article, "A Decision-Making Technique for Program Planners", James E. Seitz recommends the use of a factor inter-comparision matrix and defines nine "need criterions" that should be considered. They are:

- Net job openings, local
- Net job openings, general
- Occupational employment trend
- Wage/satisfaction incentive
- Advancement opportunities
- Opportunities for disadvantaged
- Level of training required
- Adequacy of training available
- Breadth of training needed

Seitz weights each of the factors as part of a method for establishing priorities among competing program recommendations. His technique is further explained in a paper prepared for the 1978 American Association of Community and Junior Colleges Conference, "Decision-Making Strategies for Effective Program Planning."

Orville Nelson's 1978 Wisconsin Vocational Educator article, "Emerging Occupations" is a general discussion of the development pattern of emerging occupations. He points out that:

> "There is no ready-made process for determining when the content of an existing job should be modified to satisfy the new need or when a new job should be created. For instance, the emergence of solar heating has added several new tasks to the occupations relating to heating and air conditioning. However, many of the skills required to install solar heating systems will be essentially the same as those in present jobs in the field. Therefore, many labor market researchers are suggesting that adding additional content to existing occupational training programs in the heating, air conditioning and ventilation areas will suffice to satisfy the need for new vocational skills. In contrast, the people who conduct energy audits will play a role which has not been common in our labor market. As a result, the energy auditor would probably be best defined as a new occupation."

Nelson further explains his views in two 1979 papers entitled "New and Emerging Occupations: A Process for Monitoring and Identifying the Impacts for Vocational Education," and "New and Emerging Occupations: Process for Monitoring and Identifying Impacts for Vocational and Technical Education."

Renewed attention to changing skill requirements within existing occupations is apparent in the 1979 National Center for Research in Vocational Education publication, "Curriculum Development Needs for Vocational Education: New and Changing Occupational Areas," authored by Pascal Forgione and Lee Kopp. In their view, new and

changing occupational areas are those characterized by:

1. high employment growth on a national level
2. emergence over the last decade; and
3. development arising from:
   a) the creation of a new industry, occupational area or occupation (for example the computer industry with related new occupations such as programmer);
   b) significant restructuring of an existing occupational area or occupation (for example, physician's assistant); or
   c) modification in some requirements in an existing occupational area or occupation (for example, word processing).

The changes that bring about new occupations include:

1. development of new technologies, such as laser technology;
2. changes in social concerns, such as the emphasis on environmental protection;
3. changes in national needs, such as the need for alternative sources of energy;
4. development of new market opportunities, such as those for disco dance instructor, and
5. emergence of economic conditions which motivate industry to streamline operations for increased efficiency, such as cost containment efforts in the health industry.

Forgione and Kopp also point out that collecting relevant national data was difficult for several reasons:

> "First, substantive data on new and changing occupational areas simply did not exist. Second, the occupations were not uniformly defined across employers. Third, the employment data on new and changing occupations were included within existing occupations. And fourth, the collection of data directly from employers was hindered by proprietary concerns and by employers' lack of adequate knowledge about future demand."

During 1979, the Orange County (California) Department of Education conducted a project entitled "Identification of Curriculum and Services Necessary to Train Students for Emerging Manpower Needs and Job Opportunities: A Model System." Seven new and emerging occupations (see Appendix 8), including "leisure counselor" and "fast food service unit supervisor", are described. Criteria for the selection are not explained in their published report.

Perhaps the most systematic project on the subject was done by Conserva, Inc. for the Illinois State Board of Education. Sally Spetz is the lead author. The final project report, "Current and Future Employment Opportunities in New and Emerging Occupations within Illinois" was published January 1980. In the project, new and emerging occupations were defined as "occupations which meet the following four criteria:

1. The occupation has come into existence within the past decade.
2. The occupation is skilled or technical in nature, requiring at least six months of vocational education preparation, but less than a four-year college program.
3. There are no or limited vocational education programs within Illinois which are preparing students to enter the occupation.
4. Information is currently available which reflects an anticipated shortage of workers (20 openings per year or more) within the State of Illinois over the next five years."

Seven occupations, including "swine confinement facility assistant manager", were identified as new and emerging in Illinois (see Appendix 8). Another twelve occupations were identified as having potential but for which evidence was incomplete. Forty-five occupations were eliminated from further consideration based on application of the criteria. The job duties and exclusion criteria are discussed for each. For example "Airport Security Officer" and "Child Advocate" were excluded because of education requirements (too little and too much, respectively); "Alcoholism Counselor" is not new; and "Nephrology Assistant" suffers from insufficient demand.

The National Center for Research in Vocational Education's 1980 publication "Curriculum Development Needs for Vocational Education: New and Changing Occupations," authored by Mollie Orth and Jill Russell, contains an elaborate discussion of the process of identifying and studying new and changing occupations. To identify potential new and changing occupations, 1) technological trends, 2) social and economic trends, 3) legislative trends, 4) occupational

and industrial projections, 5) related studies, and 6) external nominations are considered ("Step I"). In "studying" the potential new and changing occupations so identified, the following types of data are collected ("Step II"):

A. Job description and duties
   1. Alternative job titles
   2. Job descriptions
   3. Job duties
   4. Wages and hours
   5. Barriers and constraints

B. Education and training requirements
   1. Degree or certificate program
   2. Apprenticeship program
   3. On-the-job training
   4. Professional standards

C. Employment outlook
   1. Expansion
   2. Replacement
   3. Future projections
   4. Geographic factors

D. Employment settings
   1. Industry
   2. Product or service
   3. Size of typical employer
   4. Usual recruitment and hiring practices

E. Career opportunities
   1. Present source of workers
   2. Career ladder possibilities
   3. Transferable skill area

F. Agencies and individuals knowledgeable about the occupation
   1. Professional associations
   2. Reknowned experts
   3. Government agencies
   4. Colleges and universities
   5. Employers

Although there is mention of the need to "move back and forth between Steps I and II of the methodology", there appears to be no explanation of how the Step II information is to be applied. Four new and changing occupations are discussed in some detail. Two dynamic industrial areas, energy and microprocessing, are also discussed.

Summary: In general, projects on new and changing occupations have concentrated on curriculum development aspects rather than establishing criteria for evidence of need.

More time has been spent developing lists of glamourous sounding new occupational titles (see Appendix 8) and in developing wishful curricula than in establishing a sound basis for prioritizing proposals or developing the criteria necessary to verify that a particular occupation is indeed new, or changing, or even significant enough to warrant action.

In developing materials for use in Oregon, the OOICC subcommittee reviewed the strengths and weaknesses of these previous studies and publications, arriving at the guidelines and definitions which follow.

"EVIDENCE OF NEED" GUIDELINES
TRAINING FOR NEW AND CHANGING OCCUPATIONS

The supply of public funds for vocational education and training is limited, but program improvements and additions desired by students, faculty, and community leaders are nearly unlimited. The following guidelines for assessing training program need have been designed to aid the evaluation and comparison of program proposals to help assure the most efficient allocation of scarce public funds. Not all questions will apply to every proposal, but taken together, the information suggested through these guidelines will be invaluable in establishing the level of need for individual training programs or changes in existing programs. A glossary of terms is included.

DEFINITIONS

"New" Occupation:

An occupation whose major tasks, skills, and duties are not included in any currently existing occupation or whose tasks are combined in significantly different ways that effectively preclude workers from other occupations performing the work without training beyond a short demonstration. An occupation should be considered new if it has come into existence in Oregon within the last 10 years and has reached employment levels large enough to measure (minimum 10 positions statewide). New occupations should not be defined by geographic area smaller than statewide.

"Changing" Occupation:

An existing occupation that has experienced change in duties, skills, or tasks, significant enough to require training beyond a short demonstration, but not significant enough to reclassify into another existing occupation or to create a new occupation.

-OUTLINE-

A. OCCUPATIONAL DESCRIPTION

1. Specific Title
2. Description of Work Duties
3. Example Jobs
4. Appropriate Industries

B. BRIEF DESCRIPTION OF TRAINING REQUIRED

C. EMPLOYMENT PROJECTIONS (Demand/Supply)

1. Projected Openings
2. Employment Trends for Related Occupations
3. Growth Projections for Appropriate Industries
4. Demand Characteristics
5. Current Unemployment within the Occupation
6. Present Training Program Supply
7. Evidence of Professional/Employer Acceptance

D. FACTORS SUPPORTING EMPLOYMENT PROJECTIONS

1. Technological
2. Social
3. Legislative
4. Geographic
5. Economic

E. OCCUPATIONAL CHARACTERISTICS

1. Eligibility Requirements
2. Similar/Related Occupations
3. Career Ladders/Advancement Opportunities
4. Wage/Salary Rates
5. Hiring Channels
6. Working Conditions
7. Turnover
8. Opportunities for Disadvantaged/Handicapped

F. EMPLOYEE CHARACTERISTICS

1. Under-Employment of Present Job Holders
2. Underqualification of Present Job Holders
   New Skills Needed
3. Job Satisfaction

G. SOURCES OF INFORMATION

1. Listing of Experts and their Qualifications
2. Discussion of Data Reliability
3. Bibliography

EXPLANATION

A. OCCUPATIONAL DESCRIPTION (Technical assistance available from the Employment Division's Research and Statistics Section in Salem. Contact your local Employment Division Labor Market Economist)

1. Specific Title:
Try to locate the occupation (or similar occupation) in the Dictionary of Occupational Titles, (DOT) 4th edition. Provide all relevant DOT code numbers and titles. If none can be found, provide your own specific titles, and cite the source.

2. Description of Work Duties:
Provide task element statements to indicate the specific tasks the worker performs to accomplish the job's purpose. They should describe how the worker actually carries out his or her duties, should be similar in form and completeness to those of the DOT, and should be listed in priority order of skills required (not by % of time). The description should make clear how the occupation is different from existing or related occupations, or how it has changed in recent years.

3. Example Jobs:
Provide information on organizations or firms actually employing individuals in the occupation, if possible. Be sure to obtain the permission of the firm. (This information is needed to clarify specific job duties only if #1 and #2 above are incomplete.)

4. Appropriate Industries:
List the major industries employing this occupation. Use the Standard Industrial Classification (SIC, 1972 Ed). This information can be obtained from the OES Program, Research and Statistics Section, Employment Division.

B. BRIEF DESCRIPTION OF TRAINING REQUIRED

Describe the amount and types of training necessary to apply the skills listed in A.2. above, and locations where this training is presently available.

C. EMPLOYMENT PROJECTIONS (Demand/Supply) - For technical assistance contact the Occupational Employment Statistics Program (OES) and the Occupational Program Planning System (OPPS), both located in the Research and Statistics Section, Employment Division, Salem. OES and OPPS can also be contacted through your local Labor Market Economist.

1. Projected Openings:
   Although demand projections are not published for new or recently emerged occupations, the Occupational Employment Statistics program staff can often obtain information on particular occupations through examination of survey forms or residual data files. (Contact the OES Coordinator)

2. Employment Trends for Related Occupations:
   Demand projections for an occupation can sometimes be further substantiated by showing employment trends for similar and/or related occupations.

3. Growth Projections for Appropriate Industries:
   This information is available through the OES Program.

4. Demand Characteristics:
   Seasonal? Part-time? Full-time year-round?--What is the nature of demand for this occupation? Is it tied to seasonal fluctuations within particular industries, such as with summer dominated tourist services and timber harvesting or Christmas oriented retail sales? Is the occupation largely filled with part-time positions, as is the case with dental hygienists?

5. Current Unemployment within the Occupation:
   How many currently unemployed people are qualified for and seeking work in this occupation and closely related occupations? This information is available through OPPS.

6. Present Training Program Supply:
   How many people are currently being trained in Oregon in preparation for entering this occupation? What are the numbers of graduates and minimally-trained early leavers projected for the future? Some of this information is also available through OPPS.

7. Evidence of Professional/Employer Acceptance:
   Did this request originate with local employers or employer committees? Are local employers committed to hiring program completers? Will they cooperate through the loan of equipment or arrangements for work experience?

D. FACTORS SUPPORTING EMPLOYMENT PROJECTIONS

Be as specific as you can in showing how one or more of the following factors may have influenced (and may continue to influence) the job market for the occupation. Cite relevant publications, legislation, statistical sources, etc., in documenting these trends.

Definitions:

1. "Technological" Change:
   Shifts in industrial methods resulting from new materials, inventions, applications, or production processes.
   Examples: Laser Technology, Automotive Electronics, Word Processing.

2. "Social" Change:
   Public attitudinal or demographic shifts influencing consumer preferences and/or feelings about work and leisure.
   Examples: Women entering the work force. Increasing emphasis on leisure.

3. "Legislative" Change:
   New laws, judicial interpretations, and/or funding patterns.
   Examples: Federal Energy, Environmental Protection, and Civil Rights Legislation. (But not all national legislation applies equally in Oregon. National priorities may change rapidly.)

4. "Geographic" Change:
   Locational shifts of productive resources or the establishment of new industry in a particular area.
   Examples: New electronics firm establishes plant in Eugene. Oil discovery on the Oregon coast.

5. "Economic" Change:
   Changes in the relative supply of or demand for particular resources, products, or services.
   Examples: Home Weatherization. Diesel Automobiles.

E. OCCUPATIONAL CHARACTERISTICS

Do any of the following characteristics impact on the occupation's desirability for potential employees or employers?

1. Eligibility Requirements:
   Are there any barriers such as union membership, licensing, registration, certification, or educational minimums, that might interfere with entry into the occupation or improve stability and security within the occupation?

2. Similar/Related Occupations:
   Are there similar or closely related occupations that are now being utilized to fill needs? What are they? How will they be affected by training program changes? Are there significant problems with the present arrangement?

3. Career Ladders/Advancement Opportunities:
   Is this an entry-level occupation? Or must applicant's work at lower-level jobs before moving up to the desired positions? Does this occupation lead to other career possibilities? What are they?

4. Wage/Salary Rates:
   What are the prevailing wages and salaries offered to new employees and experienced employees in the occupation? Are they unusually low, perhaps indicative of an over-supply of workers? Are they unusually high, perhaps indicating a shortage? What is the source of wage/salary data?

5. Hiring Channels:
   Are there particular routes and procedures that must be followed in order to locate jobs and be hired in the occupation? Will program completers be able to move directly into jobs? Or will hiring channels particular to the occupation (such as exclusive union hall hiring) interfere?

6. Working Conditions:
   Do the working conditions offer any special advantages, disadvantages, or limitations in this occupation? Is the work outdoors? Dangerous? Uncomfortable? Unusual hours? Strenuous? Require travel? Is job-sharing or part-time work available?

7. Turnover:
   Turnover occurs when people change jobs. It can be defined as the ratio of replaced workers to total workers, usually calculated on an annual basis. Turnover statistics combine

"separations" (quits, discharges, layoffs, retirements, deaths, and transfers) and "accessions" (recalls, new hires, and transfers).

Is turnover a problem in this occupation? If so, why? Does the proposed program offer any solutions to the turnover problem?

8. Opportunities for Disadvantaged/Handicapped
Does this occupation offer unusual opportunities for handicapped individuals or disadvantaged persons? Is the work "light and sedentary"? Is it especially applicable to depressed rural or high unemployment areas? Is it adaptable to the abilities of disadvantaged youth, welfare mothers, or other targeted groups?

F. EMPLOYEE CHARACTERISTICS

1. Are Present Job Holders "Under-Employed"?
Are present holders of jobs in the occupation "over-qualified" such that they could be freed to do more productive work if properly trained replacements were found? (Perhaps this is evidence of is a hidden shortage of workers in this occupation, or surplus in a related occupation.)

2. Under qualification of Present Job Holders?
New skills needed? Are present employees in the occupation in need of retraining and skill up-grading that they can't obtain from the employer?

3. Job Satisfaction:
Are present employees satisfied with their jobs? Do they see the occupation as a significant part of their career plans or goals? Or do they perceive the work as temporary, not related to their career goals, a place to be only until conditions improve? Are these attitudes reflected in turnover rates?

G. SOURCES OF INFORMATION

1. Listing of experts and their qualifications. Advisory committees, employers, consultants, etc.

2. Discussion of Data Reliability--Explain how limitations of the data might lead to false conclusions in assessing need for training in this occupation. Were appropriate techniques used?

GLOSSARY OF TERMS

CIS - Career Information System (University of Oregon, Eugene. Phone 686-3872)

DOT - Dictionary of Occupational Titles (Publication)

OES - Occupational Employment Statistics Program (Employment Division, Salem. Phone 378-8650)

OOICC - Oregon Occupational Information Coordinating Committee (875 Union St. NE, Salem, OR, 97311. Phone 378-8146)

OPPS - Occupational Program Planning System (Employment Division, Salem. Phone 378-6400)

SIC - Standard Industrial Classification (Publication)

Appendix 1

EXAMPLE 1*

(Developed in response to legislative mandate.)

* Information for this example was obtained from a 1981 Portland Community College program application.

A. Occupational Description

1. Specific Title:

"Interpreter for the Deaf," DOT 137.267-014 (Interpreter, Deaf and Translator, Deaf.)

2. Description of Work Duties:

"Provides translation between spoken and manual (sign language) communication: Translates spoken material into sign language for understanding of deaf. Interprets sign language of deaf into oral or written language for hearing individuals or others not conversant in sign language. May translate television news and other broadcasts for deaf viewers."

3. Example Jobs:

Most interpreters for the deaf are employed within educational institutions. The University of Oregon Medical School has reportedly established a model network of on-call interpreters to provide necessary communications in medical situations. Other hospitals in the Portland area are working toward similar programs.

4. Appropriate Industries:

Education
Hospitals
Communications

B. Brief Description of Training Required

A minimum 700 hours of instruction and contact with sign language is necessary. Contact beyond the 700 hours and additional course work in the theory and practice of interpreting will develop the additional skills required to meet the minimum needed. A detailed curriculum description has been developed.

C. Employment Projections (Demand/Supply)

1. Projected Openings:

A survey was conducted to ascertain the current numbers of interpreters employed in education and the growth in this job market over a year's period. The following types of educational facilities were contacted for information: Regional programs for the deaf, school district programs for the deaf, community colleges, state colleges, and private colleges. Data was collected as to the number of interpreters employed as of December 12, 1979, and December 12, 1980. Elementary and secondary schools reported 21 interpreters in 1979 and 29 interpreters in 1980 which represents a 38% growth rate. Community Colleges and four-year colleges reported 35 interpreters in 1979 and 38 interpreters in 1980 which represents an 8.5% increase. Two colleges were not able to provide figures for 1979 although in 1980 they employed a total of 9 interpreters. Two other colleges employed interpreters on a contractual basis per class reporting 2 interpreters on staff in 1979 and 4 interpreters in 1980. The figures for these four colleges were not figured into the "community colleges and four-year colleges" increase reported above. If it can be assumed that the two colleges reporting no figures for 1979 were not providing interpreters at that time, the total increase for all post-secondary programs was 38%, same as the elementary and secondary figure.

In correlating state-wide educational use of interpreters, not including the two colleges contracting per class and the two colleges not responding with both figures, the overall increase reported is 19.6% (56 total interpreters employed in 1979 increasing to 67 interpreters in 1980.)

Assuming that this increase is more or less constant from year to year, ten to fifteen new openings occur every year in education alone.

Not represented in the educational interpreting survey data, are projected needs of interpreters for the deaf for the Salem Regional Program for the Deaf. This program currently serves 275 students and reports 9 interpreter/aides on staff serving 16 counties. They report a projected need of 19 interpreter/aides for the 1981 - 82 school year representing a 111% increase. It is interesting to note that this program requires "completion of appropriate interpreter training program or equivalent expertise in interpreting or is certified by the Registry of Interpreters for the Deaf" as minimum qualifications as an interpreter/aide.

2. Employment Trends for Related Occupations

3. Growth Projections for Appropriate Industries (This data can be obtained from OES.)

4. Demand Characteristics:

   The majority of interpreters work full-time. Some positions are seasonal, needed only when school is in session. Many are part-time, needed only occasionally, as when deaf persons require emergency medical treatment or are involved in arrests.

5. Current Unemployment within the Occupation: (This data can be obtained through OPPS.)

6. Present Training Program Supply:

   a. Interpreter training programs: There are no similar programs. However, there is a program affiliated with the Regional Resource Center on Deafness located on the Oregon College of Education's campus. This is a one-year program and draws students from across the United States, concentrating on Region X (Alaska, Washington, Oregon, and Idaho).

   b. Programs related to deafness. Lewis and Clark College offers a Master of Education--Special Education/Hearing Impaired. Oregon College of Education offers this same degree program as well as a Masters of Education - Counseling for the Deaf. Portland State University offers Master degree programs in Special Education, Visually Impaired/Deaf-blind, and through the Communications Disorders department programs in audiology, speech pathology and speech therapy. None of these programs trains interpreters for the deaf.

7. Evidence of Professional/Employer Acceptance:

   a. Advisory Committee

   The following people attended the Advisory Committee meeting, September 3, 1980.

   Dr. William Brelje, Chairman, TTD, Lewis and Clark College
   Mr. Bob Lidfors, Draftsman, Tektronix
   Mr. John Reiman, Director, Oregon State Mental Health Facility for the Deaf
   Ms. Betsy Winston, Interpreter
   Ms. Becky Long, Coordinator of Sign Language and Interpreter Program, Portland Community College
   Mr. Dan Sempert, Curriculum Specialist, Portland Community College
   Mr. Gaylon Huff, Program Manager of Education and Performing Arts, Portland Community College

Each member of the Advisory Committee received a description of the proposed PCC Interpreter for the Deaf Associate Degree program. The description included a job description, job opportunities, potential earnings, a general description of the PCC program, and admission requirements. In addition, the description included the layout of the individual courses in a year-by-year, term-by-term format with class hours, lab hours, and course credits. Also, each individual course in the program had a description of the content. The Advisory Committee unanimously approved of the Interpreter for the Deaf Associate Degree as proposed.

The committee shared and discussed the following concerns:

1. Should the Interpreter for the Deaf program have stronger prerequisites, requiring three terms of American Sign Language or equivalent skill prior to entry; and/or ability to enter Wr 121 level?

2. Is the Cascade Center the best location for the interpreting program? The Advisory Committee inquired as to whether Sylvania might be a more appropriate location. This is due to the fact that there are more hearing impaired students at the Sylvania Center. Student program critiques strongly suggested this move.

3. Federal legislation has mandated that the hearing impaired individual be provided with interpreting services in federal, state, and private organizations. Currently, there are not enough qualified interpreters to provide this service for the hearing impaired individual in Oregon. The State of Oregon is running behind the rest of the nation as far as providing support and leadership in the training and distribution of interpreters for the hearing impaired population. This support would include the leadership role in the coordination of interpreter training programs, the distribution of qualified interpreters to the hearing impaired of Oregon, and coordinated support in other areas that would lead to establishing interpreting as a legitimate profession, and guaranteeing that the hearing impaired would receive the needed interpretive services. As the interpreting field now exists, this coordinated activity is non-existent. Hearing impaired individuals will not receive the services that they are guaranteed by law unless the organization mentioned above is achieved.

The Advisory Committee unanimously agreed that the Associate Degree program in Interpreting for the Deaf is needed. Also, the committee agreed that there are jobs for qualified interpreters in the Portland Community College District and the state.

b. Association Support

The National Association of the Deaf, the Convention of American Instructors for the Deaf, the Council of Executives of American Schools for the Deaf, the Council on the Education of the Deaf, and the National Registry of Interpreters for the Deaf all demonstrate on-going support for the training of interpreters of the deaf through publication of information concerning interpreting and interpreter training, cooperation in conducting training seminars, and other related information workshops.

D. Factors Supporting Employment Projections:

Deafness is the leading chronic disability in the United States affecting some 2.5 million Americans. Approximately 54,000 deaf students are now attending elementary and secondary eduation programs in this country, and an additional 6,000 deaf students are pursuing study in postsecondary programs, most of whom encounter difficulties with the English language and require a supportive bilingual approach. Assistance to the handicapped has become a forefront issue in all aspects of American life stressing civil rights and equal opportunities for all handicapped people. In order to facilitate deaf people's access to mainstream America, interpreters are needed, as supported by the following information:

1. Social Change

a. The Oregon Association of the Deaf. This state-wide organization of deaf peole conducted a research project, dated January 13, 1978, entitled: The Oregon Research and Education on the Hearing-Impaired (The ORE HI Papers). Funded by the Vocational Rehabilitation Division of Oregon, this project identified and ranked the needs of the deaf in Oregon and the services provided to them. Of the 282 deaf respondents, 91% reported their communication method as relying upon sign language. Only 6% reported their communication relied on oral methods (spoken and lipread). Of the 37 ranked priorities, the need for interpreters ranked fifth (5th). Of the 121 agencies responding that they offered services to the deaf, 20 agencies (or 16%) provided interpreters. In ranking services provided, use of interpreters ranked 19th out of the 30 services offered to the deaf. Service providers reported that they viewed their

clients' communication methods in the following rank: oral = 56%; total communication (sign language and speech) = 16%; manual (sign language only) = 11%; and writing = 3%. This shows a large discrepancy between the actual communication methods used by deaf people and the communication methods agencies perceive deaf people to be able to use. Thus, agencies are not accommodating the communication needs of deaf consumers. It was also reported by service agencies that only 2% of the total agency staff members knew sign language. The majority also indicated that they never employ interpreters when they have a deaf client requesting service.

These data paint a clear picture of the lack of service provided to the deaf community in Oregon up to January 13th, 1978, prior to the Rehabilitation act of 1973 compliance dates. Since that time, these agencies have received a great deal of information concerning the law and compliance, and how to effectively provide service to the deaf people.

Currently, hospitals in the Portland area have established information and basic skill development courses concerning deafness and sign language. These courses focus on the needs of the deaf consumer in a medical situation. The sign language instruction emphasis is on basic emergency medical signs so that medical staff may deal with an emergency until a qualified interpreter arrives. One of the major problems is locating enough trained interpreters. The majority of interpreters in the Portland area already work full-time. The hospitals may wish to enroll current staff members in the proposed program so as to ensure quality service to deaf consumers.

The hospitals represent one of the numerous service agencies in Oregon who will be serving deaf consumers and, thus, will require the services of qualified interpreters for the deaf.

b. Hearing-impaired and deaf populations in Oregon: Based upon the figures published in National Census for the Deaf, 1971, and the 1980 census, there are 5,078 pre-vocationally deaf people, 24,368 deaf people, and 187,671 hearing-impaired people in the State of Oregon. (Definitions: "prevocationally deaf" are those persons who are deafened prior to age 19. "Deaf" are those people who have a significant bi-lateral impairment of hearing sufficient to cause difficulty in hearing and understanding speech. "Hearing-impaired" are those persons who suffer some loss of hearing.) The largest density lies in the Portland area, representing 2025 pre-vocationally deaf, 9716 deaf, and

74,824 hearing-impaired people, or 40% of the total Oregon population of people suffering some loss of hearing. These figures support the location of the proposed program in the Portland area.

c. Deaf Student Enrollment: Deaf student enrollment figures were collected for April 29, 1980, and December 12, 1980. Elementary and secondary schools reported 533 deaf students in April and 576 deaf students in December representing an 8% increase. Colleges reported deaf student enrollment in April to be 105 and 109 in December, or a 4% increase.

d. The Oregon Registry of Interpreters for the Deaf: This organization is a non-profit state chapter of the National Registry of Interpreters for the Deaf, and has identified the need to establish a central referral and information service agencies. A committee has been formed which is pursuing the creation of such a service.

e. Referrals to Portland Community College, Education Department: Over the past year, PCC has received many requests for interpreters in the Portland area. Other institutions such as the Portland Community College Handicapped Student Services Office; Department of Vocational Rehabiltation; Portland Regional Program for the Deaf; Mt. Hood Community College Handicapped Student Services; Oregon Mental Health Program for the Deaf (Woodstock House); and churches affiliated with the deaf community also receive a large number of referrals on a regular basis. Many of the referrals received through the Education Department require the skills and expertise of a qualified interpreter. These are referred to freelance interpreters (currently, there are only three available on a limited basis). Very few of the requests can be filled with students who are training to become interpreters.

f. Mainstreaming Deaf Students: Research conducted nation-wide and published in the American Annals for the Deaf, June, 1979 (Vol. 124, No. 3) indicates that in the Spring of 1978, 37% of all deaf students were mainstreamed into regular classrooms. Although there have been no formal studies conducted since, this figure has increased dramatically with the incorporation of the philosophy of mainstreaming in the majority of day programs for the deaf in the United States. With this increase comes a greater need for the skills of interpreters for the deaf.

2. Legislative Change:

a. P.L. 94-142: Education for All Handicapped Children Act of 1975. This Act has created a need for interpreter/aides and interpreters/tutors in each situation where a deaf child is mainstreamed into regular educational programs. Regional

programs throughout the State of Oregon are incorporating the use of these new staff members into existing programs for the deaf, as well as expanding programs into communities where deaf children live. Prior to this Act, regional programs did not have these job titles. Consequently, the Act created new positions which required specific skills beyond those skills of current staff members. With the limited pool of interpreters nation-wide, educational programs for the deaf have had difficulty finding enough trained personnel to staff these new positions. The need for upgrading skills of current staff as well as increasing the number of trained people available to education is evident in Oregon.

b. The Rehabiliitation Act of 1973 (Amendments, 1978). This act requires the use of interpreters by agencies receiving federal funding in order to serve the deaf population. Although recent litigation is pending, the Office of Civil Rights still advocates mandatory compliance with the law by all service agencies.

c. Federal Interpreter Training Program Grants. Recently, the federal government allocated $900,000 to fund ten interpreter training programs throughout the United States, supporting this emerging occupation authorized under P.L. 95-602 and acknowledging the rights of deaf citizens.

d. Proposed Legislation. A current bill in the Oregon House (HB 2721) would ask for qualified interpreters for the deaf to be hired from the point of questioning or arrest by law officers.

Currently, the Oregon Legislature is proposing a change in focus for the Oregon State School for the Deaf (OSSD). The proposed changes (HB5025) would mainstream the single-handicapped deaf students into the public schools through the regional programs for the deaf and maintain OSSD as a multiple-handicapped unit. Currently, OSSD has 212 students, a majority of them having only the single-handicap of deafness. In a state school setting, these students do not use interpreters for the deaf as staff members and teachers know and use sign language. Therefore, in mainstreaming these same students into public schools, the demand for qualified interpreters will increase significantly.

E. Occupational Characteristics:

1. Eligibility Requirements:

Certification by the National Registry of Interpreters for the Deaf (RID) certification is not necessary for most employment.

2. Similar/Related Occupations:

As a result of the dramatic increase of sign language classes available to the general public, many people have gained communication skills in the language of sign. "Communicators" are people who have varying proficiency in using sign language and who generate the communications, thus, they are in control of grammar features and vocabulary used. They function within one language format at their own level of skill. Their expressive skills tend to transcend their receptive skills and, as a result, the two-way channel of communication is often impeded.

Recent and ongoing studies of the linguistics of American Sign Language document the language's unique phonological, morphological, semantic, and transformational rules qualifying American Sign Language as a separate language apart from English. Therefore, the skills of the "interpreter" must transcend those of the "communicator." The "interpreter" must process two languages simultaneously, or quasi-simultaneously, without having control of the originally communicated message. Therefore, their own technical skills must match or exceed those of the "communicators."

Traditionally, the "communicator" has served the function of the "interpreter", resulting in a less than adequate rendition of the interchange between hearing and deaf people. Traditionally, interpretation for deaf consumers has been subjective and less than adequate. However, the law now objectifies the matter by requiring a quality rendition (See the Rehabilitation Act of 1973, Section 504). Unaware hearing people have assumed that communication was adequate if the "communicators" could use their hands in some fashion that represented the hearing person's idea of sign language. The "communicator", being untrained in the skills of an interpreter, often makes this same erroneous deduction. Therefore, the weak link in the communication chain is seen as the deaf person when, in fact, the weakness lies in the lack of skill of the "communicator."

Professionals in the field of second language instruction believe that conversational skill levels in any language can only be achieved when the student has been exposed to 700 hours of instruction and contact with the target language. Contact beyond the 700 hours with additional course work in the theory and practice of interpreting will develop the additional skills required to meet the minimum skill levels needed for interpreting. This fact supports the need for a training program for interpreters for the deaf of not less than two years in duration.

3. Career Ladders/Advancement Opportunities:

Interpreters tend to become promoted to administrators of education programs. These people are benefitted by the skills they perfected as professional interpreters for the deaf and bring these skills to their new professional pursuits.

4. Wage/Salary Rates:

(Information for this section could be obtained by a small but specific survey of currently-employed interpreters for the deaf.)

5. Hiring Channels:

Most of these jobs are with public social service and educational agencies which maintain equal opportunity and open application procedure. Many of the referrals received by PCC may well develop into full-time jobs.

6. Working Conditions:

Most of these jobs occur in comfortable offices. Travel is rarely required, but unusual hours are sometimes encountered.

The work can require strenuous concentration over long periods of time.

7. Turnover:

Although there are no national figures to provide insight into the turnover rate among professional interpreters, it has been observed that interpreters are involved in career changes as are professionals in other fields: career advancement, further education in related fields (audiology, counseling for deaf, deaf education, speech therapy), changing focus to another related profession (perhaps because of prior academic background). Others leave the field of interpreting for the deaf for personal reasons: to raise a family (the majority of professional interpreters are women), change of professional goals, burn-out (interpreting requires high levels of prolonged concentration).

This natural attrition of professionals in the field of interpreting for the deaf creates another type of need for the increase of available qualified interpreters in the job market.

8. Opportunities for Disadvantaged/Handicapped:

This is sedentary work and could offer unusually good possibilities for persons with physical handicaps (other than hearing or sight loss).

F. Employee Characteristics:

1. Are Present Job Holders "Under-Employed?"

No.

2. Under-Qualification of Present Job Holders?

(See discussion under E-2.)

3. Job Satisfaction:

Present job holders see their profession as a valuable social service, one closely related to the counseling, vocational rehabilitation, and education necessary to allow deaf people to participate in society to the fullest.

G. Sources of Information

1. Listing of Experts:

(See advisory committee listed under C7a).

2. Discussion of Data Reliability:

The lack of qualified interpreters for the deaf makes it impossible to measure the growth in this relatively new occupation. Many "communicators" (persons who know some American sign language) are now providing services which are clearly inferior to those called for in Federal legislation, services that can only be supplied adequately by professional interpreters. Our continuing failure to provide qualified interpreters is a disservice that prevents deaf people from realizing their full potential.

Appendix 2

EXAMPLE 2*

(Developed in response to technological change.)

*Information for this example partially adapted from a 1980 Lane Community College "Application for Approval of an Occupational Program" (option).

A. Occupational Description

1. Specific Title:

Word Processor, Word Processing Operator, Word Processing Specialist. DOT #203.362-500 has recently been assigned.

2. Description of Work Duties:

Formats, produces, and revises complicated documents, such as lengthy statistical and technical reports, from complex source information, including the retrieval of text and data from electronic files using word processing equipment which may include typewriter keyboards, cathode ray tube displays, single or multiple printers, optical character recognition, and related devices. Reads proof copy of entered material and corrects typographical errors in spelling, punctuation, and grammar.

3. Example Jobs:

Word Processing Specialists are employed by the City of Salem, several State of Oregon agencies, Portland General Electric, and many other organizations.

4. Appropriate Industries:

Word Processing Specialist is a clerical occupation often included under the general title, "typist". Typists are found in the following industries:

%	SIC	Industry
22.3	9300	Local Government
17.2	9200	State Government
7.6	9100	Federal Government
6.8	6300	Insurance
6.5	7300	Business Services
6.3	8000	Health Services
4.1	5000	Wholesale Trade
3.8	6000	Banking
2.4	4800	Communications
2.4	8900	Miscellaneous Services
20.6		Others

(from the "Inverse Matrix" file, OES)

Information for this section was obtained from:

ES Programs and Procedures
Employment Division
875 Union St. NE
Salem, OR 97311
Phone: 378-8650

Occupational Employment
Statistics (OES) Program
Research and Statistics
Employment Division
875 Union St. NE
Salem, OR 97311
Phone: 378-8650

International Word Processing Assn.
1015 North York Rd.
Willow Grove, PA 19090
Phone: (215) 657-3220

Salem Area Wang Users' Assoc.
Cheryl Miller, Acting Chairperson
Phone: 378-3715

B. Brief Description of Training Required:

Typing skills, grammar, punctuation, spelling, and formatting. Use of dictionaries, handbooks and other reference materials. Dictation and transcription, record maintenance, and proofreading.

Machine operating procedures, editing functions, and terminology.

Information for this section obtained from the International Word Processing Association Salary Information publication.

C. Employment Projections:

1. Projected Openings:

According to OES Occupational Employment Trends, the projected growth in employment for typists is 27.29% for the eight-year period 1978 - 86, an average of better than 3.4% annual increase, more than 400 new positions each year. Total openings, including those due to labor force separations, are forecast to be 956 annually. In absolute numbers, typists are one of the fastest growing of all occupations.

(The demand for Word Processing Specialists could be further substantiated using data on installations and projected sales of word processor equipment. This data might be obtained by contacting the distributors of the major equipment manufacturers, such Wang, IBM, Lanier, Exxon, Xerox, A. B. Dick, Olivetti, etc.)

2. Employment Trends for Related Occupations:

Clerical occupations as a group are projected to increase at a rate of better than 3 1/2% annually, slightly better than the average for all occupations.

3. Growth Projections for Appropriate Industries:

The following analysis is based on data obtained from the Statewide Matrix file maintained by the Employment Division's OES Program:

SIC	Industry	Total Employment 1979	87 Pro.	% Increase	% Annual Increase	% Typists
9300	Local Govt.	113407	129862	14.5	1.81	2.54
9200	State Govt.	54402	63392	16.5	2.06	4.14
9100	Federal Govt.	29787	33281	11.7	1.46	3.40
6300	Insurance	13056	16703	27.9	3.49	7.31
7300	Business Serv.	24018	36398	51.5	6.44	3.86
8000	Health Serv.	62658	85604	36.6	4.57	1.38
5000	Wholesale	67148	82243	22.5	2.81	1.34
6000	Banking	16852	22169	31.6	3.94	3.12
4800	Communication	15808	18950	19.9	2.48	2.18
8900	Misc Services	10959	14459	31.9	3.99	3.07
	All Others	664371	837348	26.0	3.25	
	Total	1072066	1340409	25.0	3.12	1.26

The most rapidly growing industries employing significant numbers of typists are business services, health services, miscellaneous services, banking, and insurance. These industries are also among those reportedly making the most rapid conversions to word processing.

4. Demand Characteristics:

These are primarily full-time year round positions, although work through temporary employment service agencies is also available.

5. Current Unemployment within the Occupation:

According to the Employment Division's OPPS publication, there were 846 typists unemployed in 1980, as compared with 912 statewide openings for the year.

OPPS forecasts a balance in supply and demand for typists. (Word processing operators, more highly qualified and specialized than typists, probably experience much higher demand and a much lower unemployment rate, especially since

many of the new openings for typists appear to require the qualifications of word processing specialist.)

Information for this section was obtained from OPPS, David Allen, Coordinator, Employment Division, 875 Union St. NE Salem, OR 97311; phone 378-6400.

6. Present Training Program Supply:

(The information appropriate for this section might be a listing of those state or local institutions which include word processing as part of their curriculum, along with the estimated number of students and annual number of program completers.)

7. Evidence of Professional/Employer Acceptance:

Two advisory committees have been involved. The first is the Office Careers Advisory Committee. This committee serves the Office Career programs within the Business Department and, as such, is made up primarily of secretarial, clerical and accounting employers and employees as well as students. Since a very small part of this committee is involved in word processing, a special Word Processing Ad Hoc Advisory Committee was formed to assist in the development of word processing courses and curriculum. Through the efforts of the special ad hoc committee, the following information was gathered:

a. The kind of equipment being utilized most often in the area.

b. Projections as to training needs for entry level word processing specialists, supervisors and managers.

c. Components of a survey course on word processing.

d. Classifications of equipment that should be purchased for training word processing specialists.

e. Skills necessary for success in a word processing environments.

f. Speakers and field trips for use in word processing courses.

g. Assistance in writing course approval materials and grant proposals.

h. Identification of instructional materials available in the field.

i. Review of curriculums for word processing utilized in other institutions.

j. Sharing of publications ranking equipment systems.

The work of this ad hoc committee was funneled through the staff to the Office Careers Advisory Committee where curriculum proposals and goals and objectives for the option were reviewed, revised and sent on through the curriculum process.

The members on both committees were:

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*Word Processing employees

D. Factors Supporting Employment Projections:

The following data and trends have been collected from various word processing machinery vendors, word processing managers and word processing specialists.

1. The sale of word processing equipment is showing the largest increase of any type of office equipment presently on the market, with an average annual increase anticipated over the next five years of 15 percent per year or more. This will cause a marked increase in the number of trained word processing specialists needed.

2. The rapid increase in computer technology is causing the price of word processing equipment to remain about the same. With present rates of inflation, as the buying power of a dollar decreases and the price of equipment remains the same or increases at a level less than the rate of inflation, more and more companies will find it economical to purchase text-editing equipment, again increasing jobs available.

3. In almost all cases, equipment is less expensive to purchase, staff and operate than hiring the necessary staff to do the same work utilizing nonelectronic means. The utilization of text-editing equipment has been shown to be economically feasible for most mid- to large-sized businesses. In many cases productivity can be increased to levels whereby one person and a piece of text-editing equipment can do the work of two to three people. The increased productivity and decreased costs are causing many companies to purchase equipment to decrease overhead. Trained operators are needed to operate this equipment.

4. A multitude of jobs for word processing specialists seems to be available, as has been noted in: local newspaper advertisements, private employment service job requests, state employment service requests, calls to Lane Community College for specialists, postings in federal, city, and county government personnel offices. Estimates of openings in Lane County for the 1979-80 school year indicate that about 40 to 70 openings have been available during the past year with the majority of the jobs being filled by operators that must be trained due to a lack of qualified operators.

Word Processing is an emerging profession and, as such, specific employment data are difficult, if not impossible, to find. It should be noted that large employers and government are beginning to identify their word processing specialists not as secretaries or typists, but as word processing specialists,

text-editing operators and other titles that identify the jobs more specifically. Due to the additional skills needed and a small supply of operators, the salaries commanded by operators are considerably above those of secretaries and other clerical positions. We are told that, within the next three years, OES employment data will include projections for a new job title in the clerical area dealing with word processing. The title has yet to be selected due to the number of different titles being utilized in the emerging profession.

E. Occupational Characteristics:

1. Eligibility Requirements:

None. No licenses, registrations, or certificates are required.

2. Similar/Related Occupations:

Secretaries, typists, and other clerical specialists are currently spending part or all of their time as word processing operators. Many are trained on the job, since training can be done in a relatively short time.

3. Career Ladders:

As cited by the IWPA, related advanced occupations and specializations include Word Processing Assistant Supervisor, Phototypesetting Specialist, Word Processing Trainer, Proofreader, Word Processing Supervisor, Word Processing Manager, and Administrative Secretary.

According to the IWPA, the ratios of these advanced occupations to the basic word processor categories in Portland and the Far West are as follows:

	Portland	Far West
Word Processing Operator/Specialist	79	1612
Word Processing Assistant Supervisor	11	274
Word Processing Trainer	--	33
Photo Typesetting Specialist	--	74
Proofreader	2	147
Word Processing Supervisor	17	309
Word Processing Manager	10	152
Administrative Secretary	37	607
Firms Responding	24	396

These are primarily specialized or supervisory jobs.

4. Wage/Salary Rates:

Comparing salary figures for secretaries and typists compiled by the Employment Division (statewide) with salary figures for secretaries and word processor operators/specialists compiled by the IWPA (for Portland), it appears that word processor operators/specialists receive 10% to 30% more pay than typists, with the larger differences at the high end of the scale. This would indicate that competent word processing personnel are in high demand.

Salary Comparison: Secretaries, Typists, and Word Processing Specialists

		Monthly Salary ($)		
		Low	Average	High
Employment Div. Compilation (*August 1980)	Secretary	600	915	1200
	Typist	560	770	900
IWPA Portland Area (April 1980)	Secretary	528	839	1134
	Word Processing Operator	714	889	1134
	Specialist	758	966	1243

*Includes data from Sept. 79 through June 80.

5. Hiring Channels:

There appears to be nothing that would restrict or inhibit program completers from moving directly into available jobs. These are not hiring hall jobs. Some prospective employees, however, are said to be secretarial students recruited directly out of schools to be trained on word processing by the hiring firm/agency.

6. Working Conditions:

These jobs are indoors generally in clean, comfortable offices. There have been reports of eye strain and radiation hazards with continuous use of CRT, thus far unsubstantiated.

7. Turnover:

Turnover is a typical problem with low-paying clerical jobs, but it is less of a problem where pay is adequate. Where these positions are not recognized as separate from "typist" or "secretary" turnover is more of a problem because trained employees leave for better paying jobs where their word

processing skills are recognized. The State of Oregon, for example, is moving to designate a new classification, "Word Processing Specialist" to help this problem.

8. Opportunities for Disadvantaged/Handicapped:

   These occupations may be especially attractive to people with certain disabilites. It is light and sedentary work similar to that of "typist".

F. Employee Characteristics:

Present job holders are typically under-qualified. In fact, many employers are said to be providing their own training programs.

Job Satisfaction: (Information on this section might be obtainable through a professional organization such as the Salem Area Wang Users' Association.)

G. Sources of Information:

1. Advisory Committee (see C-7 above)

2. Consultants (see C-7 above)

3. Data Reliability

   Occupational demand and unemployment data may not be detailed enough to show the tremendous recent growth in this occupation. Current statistics may not be able to identify the growth in time spent on these job duties by traditional clerical personnel such as typists and secretaries.

Appendix 3

EXAMPLE 3* (abbreviated)
(Developed in response to technological change.)

Information for this example adapted partly from a 1978 Portland Community College "Application for Approval of a Vocational Program."

A. Occupational Description:

1. Specific Title:

Software Technician: The occupation is so new that it does not appear in the Dictionary of Occupational Titles (DOT).

2. Description of Work Duties:

A software technician writes programs for micro-processors as well as conducts tests on the programs and equipment. This is a "new" occupation in that it is a hybrid of computer programmer and electronics technician.

A software technician performs some of the duties of Electronics Technician (DOT 003.161-014, sometimes titled, Computer Laboratory Technician): "Builds, tests, troubleshoots, repairs, and modifies electronic equipment; conducts tests to evaluate performance and reliability of production models." A software technician also performs some of the duties of Programmer (DOT 020.167-014, -018, -022, 020.187-010): "develops and writes computer programs, analyzes test runs to correct programs." Job specifications for Software Technician have been obtained from Intel and from Tektronix, Inc.

The Intel "Job Rating Specifications" for Software Technician I, II, III, and IV call for various levels of proficiency in the following duties:

"Perform technical duties to develop, edit, modify, and debug software used to test various I/O's and subassemblies of systems product line:

Codes individual modules of released products from rough designs or detailed notes. Corrects syntax errors and some logic errors (debugging) in small programs. Writes programs for own use or in-house use. Devises tests for own programs or modules and executes them. Expected to have writing and reading knowledge of one or more programming languages and knowledge of general principles of good program design and structure."

The Tektronix job description is as follows:

"FUNCTION

This position is for the Software Technician who has completed formal electronics training in Computer Science and/or Hardware technologies or the equivalent in training or experience.

The major responsibility of the position is to assist in the development of Software packages where tasks are well defined and supervised. Routinely test, troubleshoot, and redevelop software to assure compliance within specifications for project support.

MAJOR RESPONSIBILITIES

Assists in the design, development and testing of the system with limited supervision, including:

-- Planning what the equipment will do.

-- Programming and coding the program to tell the microprocessor what to do and how to do it.

-- Evaluating that system to be sure it does what it is expected to do.

-- Make necessary changes in the program to correct faults and poor execution errors.

Analyze, troubleshoot and debug technical problems encountered in Software.

Prepares project documentation and maintains project files according to prescribed standards and methods, using special skills and discipline to document the details of each program so that procedures and/or faults can later be traced to their origin.

Interfaces with Software Engineers, Software Librarians and/or programmers for project support.

Modifies existing programs given specifications and overall design.

MINIMUM QUALIFICATIONS FOR CONSIDERATION

Associate degree in Computer Technology or equivalent work experience in Computer Science.

Ability to translate requirements into working Modules.

Working knowledge of at least one high-level Programming language, and knowlege of Assembly language as is deemed appropriate. Five major areas are considered most important:

--Languages
--Data Base
--Business application
--Operating Systems
--Numerical Analysis

Ability to communicate effectively both orally and in writing."

3. These positions are located in firms using and manufacturing micro-computers, including Tektronix, Intel, and Floating Point System.

4. Appropriate Industries

(See A-3 above.)

B. Brief description of training required.

The training program involves 34 credits in electronics and 38 credits in computer programming in addition to 18 credits in general subjects (see program description attached).

C. Employment Projections

(Information for this section can be developed with assistance from the OPPS and OES program coordinators, Employment Division, Research and Statistics, 378-6400 or 378-8650).

Inter-Office Communication

To: Harry Stewart Date: March 27, 1978

From: Joe Gayer
F.D.I. Mfg. Dev. Mgr.

Subject: Software Technician
(S.W.T.) I.O.C. 3/21

To address your questions specifically, Harry:

A. Yes, we are interested and feel we have pending needs - six months to one year from now.

B. Two areas are now visible - Automatic Board Testers and G.P.I.B. Testing, and QC of Instruments. Today we have difficulty describing what a S.W.T. needs to know, but I'm convinced a hardware oriented, test requirement oriented technician who learns the appropriate software is more desirable than a 8SCE or 3SCS. Until equipment decisions are made, the level of software background - types of language etc., questions are academic, but we would like to stay abreast of the Committee's direction and decisions.

Keep us informed. Thank you.

Joe Gayer

JAG:jg

cc: Ted Shaver
Larry Adams

COMPUTER SOFTWARE TECHNICIAN

Computer Programming
(Software Technician Option)

Dept	Cr No	Course Title	Cl/Lab Hrs/Wk		Cr Hr
FIRST TERM					
CST	2.211	Software Programming I	4	2	4
Mth	125	Software Technician - Math I	5	1	5
Wr	2.301	Business Communications I	3		3
CST	6.117	Basic Electric Circuits	4	6	6
Totals			16	9	18
SECOND TERM					
CST	2.221	Software Programming II	5	1	5
Mth	126	Software Technician - Math II	5	1	5
Wr	2.302	Business Communications II	3		3
CST	6.127	Basic Electronic Circuits	4	6	6
Totals			17	8	19
THIRD TERM					
CST	2.231	Software Programming III	4	2	4
CS	233	Introduction to Numeric Computation	4	2	4
Wr	227	Technical Report Writing	3		3
CST	6.137	Digital Logic Fundamentals I	6	4	6
Totals			17	8	17
FOURTH TERM					
CST	6.248	Introduction to Microprocessors	3	3	4
CST	2.241	Low Level Languages	4	2	4
Sp	100	Basic Speech	3		3
CST	6.247	Digital Logic Fundamentals II	3	3	5
Totals			14	8	16
FIFTH TERM					
CST	2.123	Language Processors	4	2	4
CST	2.136	I/O and Data Communication Programming	4	2	4
Psy	101	Psychology and Human Relations	3		3
CST	6.257	Peripheral Circuits	3	3	4
Totals			14	7	15
SIXTH TERM					
CST	2.126	Project Management	4	2	4
CST	2.132	Operating Systems	4	2	4
CST	2.141	Field Project	1	18	6
CST	6.267	Advanced Micro Systems	3	3	4
Totals			12	25	18

Minimum credits required for associate degree — 103.

CST 2.211, Software Programming I, 4 cl, 2 lab hrs/wk, 4 cr — This course emphasizes problem-solving techniques such as topdown design, structured programming and data-hiding. Design tools such as flowcharts and decision tables are used, and students learn about data representations and writing elementary programs in PASCAL.

Mth 125, Computer-Oriented Mathematics I, 5 cl hr/wk, 5 cr — Students study topics of numerical mathematics including scientific notation, number bases, complex numbers, elementary trigonometry, matrices, vectors, linear programming, and BASIC computer language. Use of hand-held calculators and computers is encouraged.

CST 6.117, Basic Electric Circuits, 4 cl, 6 lab hrs/wk, 6 cr — A foundational course in basic electric circuit principles. Topics include basic terminology; circuit configurations; analysis techniques; circuit troubleshooting techniques; and laws of electricity including Ohm's Law, Kirchhoff's voltage and current laws, Thevenin's Theorem, Norton's Theorem and Superposition.

Wr 2.301, Business Communications I, 3 cl hr/wk, 3 cr — Emphasis in this course is on writing effective letters and memos, analysis of communication problems, evaluation and organization of material to achieve appropriate tone and style, and copy editing. The course combines reading, lecture, discussion and individual student/instructor conferences. Prerequisite: Business department recommendation based on writing placement test.

CST 2.221, Software Programming II, 5 cl, 1 lab hr/wk, 4 cr — Students learn more PASCAL language as well as tables, control blocks and transition matrices. Students are also introduced to techniques in searching and sorting, Monte Carlo methods simulations, the functioning of compilers and operating systems, and proofs of program correctness.

Mth 126, Computer-Oriented Mathematics II, 5 cl, 1 lab hr/wk, 5 cr — Students study topics in non-numerical areas of mathematics including sets, logic, Boolean algebra and switching networks as well as tables, derivatives, calculating error, sequences and series. Use of hand-held calculators and computers is encouraged. Prerequisite: Mth 95, examination or consent of the Mathematics department.

Wr 2.302, Business Communications II, 3 cl hr/wk, 3 cr — This course continues to build the written and oral skills necessary in business. Emphasis is on gathering information, writing and editing longer business communications. Special attention is given to planning, interviewing and non-verbal communication. Oral presentations are videotaped when possible. Prerequisite: Wr 2.301.

CST 6.127, Basic Electronic Circuits, 4 cl, 6 lab hr/wk, 6 cr — This is a foundational course in semiconductor device operation. Topics include an introduction to semiconductor physics; diodes; and bipolar, field effect and MOS transistor operation. Basic concepts include biasing, circuit analysis and trouble-shooting techniques. Both linear and switching applications of transistors are studied.

CST 2.231, Software Programming III, 4 cl, 2 lab hr/wk, 4 cr — This is the final course in the study of PASCAL languages and software programming concepts. Particular attention is paid to complex data structures and a survey of graphs and diagraphs. Recursive procedures are taught which simplify handling of these structures, and students learn about additional data types and differences in procedure handling in other languages.

CST 233, Introduction to Numerical Computation, 4 cl, 2 lab hr/wk, 4 cr — This course concentrates on teaching students how to use the FORTRAN language to solve numeric problems. Special emphasis is placed on the sources of numerical errors and methods to control them. BASIC is used to introduce students to heuristic programming.

Wr 227 (T), Technical Report Writing, 3 cl hr/wk, 3 cr — Students discover appropriate means for organizing, developing and presenting technical material in oral and written form. Depending on the needs of individual students, reports may take the form of manuals, appraisals, or records of investigations. Classroom discussion is combined with frequent conferences with the instructor. Prerequisites: Wr 1.101 and 1.102, or Wr 2.301 and 2.302, or Wr 121 and 123.

CST 6.137, Digital Logic Fundamentals I, 6 cl, 4 lab hr/wk, 4 cr — A foundational course in SSI and MSI combinational and sequential logic devices. Topics include basic gates, logic families, device parameters, Boolean Algebra, minimization techniques, digital analysis and trouble-shooting techniques.

CST 6.248, Introduction to Microprocessors, 3 cl, 3 lab hr/wk, 4 cr — This course includes both hardware and software topics related to microprocessor systems. Software topics include a description of instruction sets, program coding and debugging, loops, tables and lists, and programmed I/O. Hardware topics include system design, timing and interfacing.

CST 2.241, Low Level Languages, 4 cl, 2 lab hr/wk, 4 cr — Students learn the relationship between the computer and programming languages, the advantages of machine translation and how programs interact with the computer's operating system. Instruction in writing and use of assembler language macro-instructions is included.

SP 100, Basic Communications, 3 cl hr/wk, 3 cr — Students investigate and define the basic structure of speech communication; identify, design, prepare, present and listen to different types of speech projects; demonstrate understanding and skill in oral communication; and begin to develop expertise in critical thinking.

CST 6.247, Digital Logic Fundamentals II, 3 cl, 3 lab hr/wk, 4 cr — This course continues the study of sequential logic circuits. Topics include state machine descriptions, synthesis for gate oriented design, synthesis for ROM-centered design, and linked state machines.

CST 2.123, Language Processors, 4 cl, 2 lab hr/wk, 4 cr — This course investigates various language processors-assemblers, compilers, interpreters and pseudo-interpreters. Students study the structure and component parts of language processors before developing and coding a language processor in PL/I.

CST 2.136, I/O & Data Communications Programming, 4 cl, 2 lab hr/wk, 4 cr — This course covers topics in I/O Programming and data communications, including writing I/O modules, error detection and correction, synchronous and asynchronous communication, signal transmission, and interface standards.

Psy 101 (T), Psychology and Human Relations, 3 cl hr/wk, 3 cr — This course is specially designed for students in career programs. Students study basic principles of general psychology in the areas of motivation, competition, learning, habits, attitudes, interests, emotion and personality, with emphasis on practical application of these principles in life and job situations.

CST 6.257, Peripheral Circuits, 3 cl, 3 lab hr/wk, 4 cr — This course focuses on peripheral circuits for microcomputer systems. Topics include interrupts, DMA, A/D conversion and associated I/O software modules. Laboratory sessions provide experimentation with some of the LSI peripheral devices being used in microprocessor systems.

CST 2.126, Project Management, 4 cl, 2 lab hr/wk, 4 cr — This course is designed to give students a deeper appreciation of the problems of project management. Students learn the use of CPM and PERT charts for project scheduling and techniques for estimating resources and practice in organizing and managing programmer teams.

CST 2.141, Field Project, 1 cl, 18 lab hr/wk, 6 cr — This course consists of on-campus projects or on-the-job assignments in local electronics companies. Students gain exposure to real-life project development situations.

CST 2.132, Operating Systems, 4 cl, 2 lab hr/wk, 4 cr — This course introduces students to operating systems and functions including I/O, job initialization, dumps, dynamic debugging tools, and cassette and diskette utilities. Students analyze and write operating system code.

CST 6.267, Advanced Micro Systems, 3 cl, 3 lab hr/wk, 4 cr — This course surveys the latest developments in microcomputers during the last year. Content changes as the technology changes from year to year or term to term.

Appendix 4 Original Concept Paper

Rev. 7/18/80
09668

"New and Emerging" Occupations

Problem: There are currently various perceptions of how to define "new and emerging" occupations within the economic and educational training communities. These differing perceptions cause serious confusion between the two groups and lead to major problems in the education and training program planning approval process. In some cases the word "technology" is used in reference to occupations when it should apply to an industry process. Another problem is whether a "new and emerging" occupation is truly a new occupation, or simply an existing occupation whose job duties have been modified or changed with the introduction of a piece of new equipment or process.

Purpose: To define the concept of "new and emerging" occupations--to clarify the major problem areas between the differing perceptions of "new and emerging" occupations and to establish a set of tentative standards and processes for analyzing and resolving these issues for vocational education and training program planning, specifically in the community college, apprenticeship, and CETA contexts. The OOICC has tentatively identified the problem as a key one for developmental research in its 1981 work plan; some $4000.00 has been tentatively allocated to the project, and the Employment Division has been identified as the sub-contractor.

Procedures:

1. Develop concept paper and plan of work (8/21/80).
2. Establish an OOICC Task Force comprised of personnel from the state and local Vocational Education Division, Employment Service LMI and Occuptional Analysis Units, community colleges, CETA, Apprenticeship Division BLI, Higher Education, and interested private sector representatives (8/21/80).
3. Conduct a literature search to identify accepted definitions of "new and emerging" occupations, and related concepts such as "technology" (8/21/80).
4. Develop and prepare survey document (8/21/80).
5. Conduct an in-depth personal interview survey with Vocational Education, community college, CETA, Apprenticeship, Higher Education, and LMI personnel to obtain the various perceptions of "new and emerging" occupations and related issues (9/21/80).
6. Prepare a written analysis (draft report) of the results of the in-depth survey and the literature search with recommendations for establishing a standardized definition and a set of procedures for addressing "new and emerging" occupations in vocational education planning (10/1/80).
7. Review draft with Task Force and other interested individuals (10/21/80).
8. Prepare a final report for adoption by OOICC (10/31/80)
9. Prepare and schedule training sessions on "new and emerging" occupations (early 1981).

Appendix 5

New and Changing Occupations Subcommittee
1980 - 81

Membership:

Joan Stoddard	Department of Education
Tom Lynch	Employment Division (OOICC Chairperson)
Ed Bissell	Employment Division
Ann Privrasky	CETA Lane County
Walt Large	Bureau of Labor and Industries
George Moore	Chemeketa Community College
Nita Crimins	Oregon Vocational Association
Elinore Rogers	Oregon Education Coordinating Comm.
Allan Mann	Department of Economic Development

Staff:

Dave Fretwell, OOICC	(through December 1980)
Jim Stembridge	Employment Division
David Allen	Employment Division
Nancy Hargis	Department of Education & OOICC

List of Reviewers:

Michael Stevenson	Mt. Hood Community College
Tom Barrett	Oregon Human Development Corporation
Ellsworth E. Mayer	Blue Mountain Community College
	Multnomah-Washington Employment and Training Agency
Jim Van Dyke	Portland Community College
Joan Stoddard	Oregon Department of Education
Earl McCollum	Treasure Valley Community College
Fran Miller	Career Information System
Nita Crimins	Oregon Vocational Association
Greg Layton	Jackson-Josephine Job Council
	Rogue Community College
Sharon Wallace	Oregon State University
Ed Bissell	Employment Division
Don Stiffler	Employment Division CETA Programs
Nancy Hargis	Oregon Occupational Information Coordinating Committee
George Moore	Chemeketa Community College
Ross Moran	Vocational Rehabilitation Division
Tom Sullivan	Governor's Commission on Youth
George Nordling	Vocational Village High School, Portland School District
Donna Lucas	Workers' Compensation Department
Norman Yap	Portland Community College

New and Emerging Occupations
Sub-Committee

MINUTES

DATE: September 11, 1980
PLACE: CETA Office, Salem

Dave Fretwell gave a brief explanation of the Oregon Occupational Information Coordinating Committee.

Tom Lynch discussed the problems of new and emerging occupations in that they come from many sources:

A. Federal legislature
B. Newspapaer

Many other comments were made by members of the committee:

Old occupations can be new and/or emerging occupations by introducing a new industry to another part of the country.

Everyone on the task force involved in planning and training should ge together and set guidelines and set a standard process of deciding when an occupation is new or emerging.

We need new and emerging and related terms defined. For example, "technician" there are several kinds of technicians in different industries.

Current Problem: we have to recreate the process for each person or institution setting up a program for new and emerging occupations.

Jobs are becoming more specialized (eg. general mechanic is now specialized in tune-up etc.).

Schools seem to be spending bulk of time on specialty and minimal time spent on general type of work.

Perhaps increasingly specialized jobs are new or emerging occupations:

A new occupation within an occupation.
1. (tune up) instead of just tune up, you now have DEQ equipment on engines and you need to be a specialist to get through all this stuff.

A real question is: How many people are needed for a new or emerging occupation and is there a real need for this additional training?

Elinore Rogers - the Oregon Education Coordinating Commission is involved in new programs, after the Board of Education accepts a new program statewide, they review it on need, employment need (statewide) and in terms of physical impact, duplicity, and consistency.

Two things to consider: 1. how much schooling required? and 2. cross fertilization of occupations to create new occupations.

George Warren - Clackamas Community College

Question on auto industry: funding hard to get, jobs approved, funded then gone, short time programs.

Solar energy - new and emerging occupation: slow but may blossom and then again may not.

Definition of occupation is hazy - How do you define when the job is new or emerging? (eg. pipe fitter - place at which no longer works on construction but works entirely on refrigeration).

DOT Job Description - jobs sometimes fit description and sometimes don't, also is the job really new or just new to the state, city or national level?

Ann Privrasky - CETA-Lane County: How do we deal with occupations such as service occupations? Locally a new hotel is going in which will put this occupation into high demand yet is is not new.

Nita Crimins - Sabin Skill Center: Businesses main complaint of Oregon is that industries want to locate in Oregon but Oregon has not the manpower to run the industries.

Money is needed to identify problems and get industry to locate in Oregon.

Tourist industry is big but Oregon may not be ready for the problems of tourism.

Tom Lynch - need training and equipment for colleges but it's very expensive and industry wants training but won't loan equipment, schools can't afford to buy.

Tom Woodnut for (George Moore) Chemeketa Community College: doesn't like training to be based on "time or term".

Elinor Rogers - Oregon Educational Coordinating Committee: need to get rid of the words "professional" and "vocational". There is a real stigma attached to these two words. This is also found in the middle schools. Women are ignorant to the fact that they can do something else besides the so called "normal" jobs for women. This starts in the lower grades and by high school they are decided.

APPRENTICESHIP: Medical, Health, Government and Private Industry are taking the concept of apprenticeship and letting private industry do the training.

Ed Bissell - OES: employer based survey in Oregon, takes 3 years to complete cycle, description bases on DOT, take similar jobs and lump into one category (carpenter: framers etc.). Basic data is reliable - when an occupation exists in the lumber industry it may also exist in banking (clerical/bookkeeper), these are lumped for analysis.

Detecting a new occupation is possible, "All Other, Skill & Non-Skill Residual" are at the end of the questionnaire and then are reviewed for new and emerging occupations.

-2-

Employment will do survey to determine what changes needed in "Welding Industry" since there are different types of welding: 1. stick electrode, 2. mig welding, and 3. tech. welding.

The Board needs this information so they can make changes in occupations for future planning. If we all contribute resources it will have an impact on jobs.

"Residuals" on the survey are checked to see if they are new or unique or belong in another category.

Tom Lynch - the employment potential might be better if students were graduated in December or some other time than June to give the graduates better job prospects.

Jim Stembridge - A chairman of a subcommittee is needed and the following questions need answers: 1. What is the impact? 2. Definitions needed. 3. What processes needed. 4. What new programs if any. 5. Program improvement.

Elinore Rogers - OECC: Would be helpful if we did have some new and emerging occupations examples.

Tom Lynch - send list of new occupations to Tom Lynch or Jim Stembridge to see if they are new. Requests are analyzed differently by Community Colleges than Bureau of Labor.

We need to tie up loose ends and start analysis and send to those not at meeting.

Jim Stembridge - wants to develop ideas and work with the Task Force and then send the ideas to others for reaction.

Task Force will meet again in three months with the bits and pieces of ideas put together to review.

New and Emerging Occupations

Subcommittee Meeting - Dec. 17, 1980

Comments from the first meeting were reviewed.

Stembridge pointed out that the purpose of the project is to streamline the process of responding to changes in the labor market.

There followed an extended discussion of problems involved with identifying changing occupations, on-the-job training (ojt), reporting systems, industry cooperation, and governmental response.

Since all occupations are changing to some degree, at what point does a particular job fall into the "changing" category?

The concensus of the group was that an occupation is "changing" if the worker re-training required takes longer than one work day. Training for a "new" occupation would require 30 days or more.

Following discussion of individual comments on proposed definitions that were mailed to members, the concensus was to adopt definitions suggested by Ed Bissell as modified (see attachment A).

Stembridge then presented preliminary alternative procedures for addressing "statements of need" in training program proposals involving new or changing occupations. The concensus of the group favored adoption and expansion of the "Standard Outline Format" alternative (see attachment B).

Next meeting tentatively set for February or March.

(Additional notes and tapes of the meeting are held by OOICC).

Jim Stembridge, Project Coordinator
Jan Stiffler, OOICC Secretary

NEW AND CHANGING OCCUPATIONS

Minutes

April 20, 1981

Department of Economic Development

155 Cottage St.

Salem, OR 97310

The meeting was called to order at 9:15 a.m. by Jim Stembridge, Acting Coordinator of OOICC.

Jim reported on the progress to date on the New and Changing Occupations project. On March 6 he mailed out the draft and a mini-survey which was to be completed adding comments etc. and mailed back to Jim to be discussed at the next meeting.

Jim discussed some of the comments and ideas that were sent back to him. It appeared that a basic agreement on the "Definitions" was reached as was a general agreement on the proposed outline for verifying evidence of need.

It was suggested that the section entitled "Standard Outline Format" be changed to "Standard Outline Guideline". The content basically remained unchanged.

The committee disagreed somewhat on the "Explanation" section. Under section (A)"Occupational Description", #1 (Specific Title) it was suggested that a paragraph be added stating whom to contact for technical assistance. The client could not go to the DOT for this information without having some training in the use of the DOT. It was also suggested that in each step of the "Explanation" section, technical assistance must be explained/offered.

Under section (C) "Employment Projections", it was suggested that statewide as well as local data should be included in the projections.

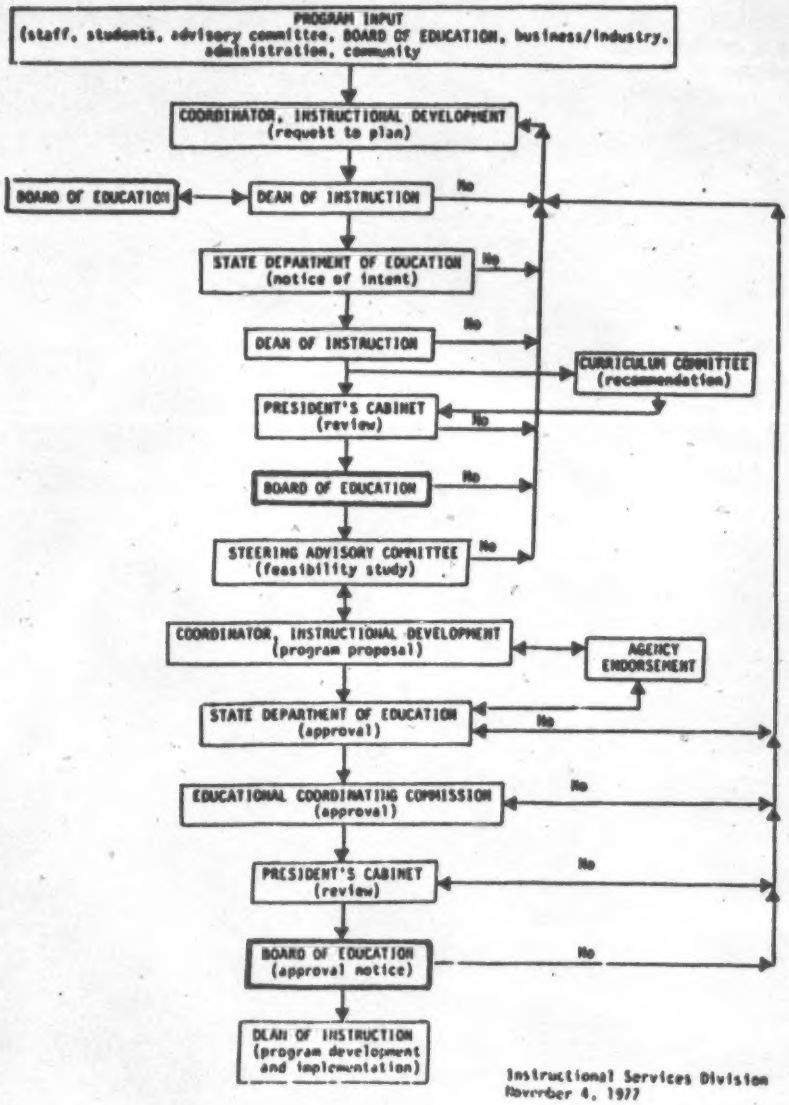
It was felt by the committee that the project was almost completed with just a few minor changes to be made. Due to the upcoming workshops OOICC is planning, the revisions and review will be postponed until sometime during June. When the revisions have been made, they will be sent out to the NETWORK Subcommittee for final review and revision. The NETWORK Subcommittee will also make the decision whether to send the New and Changing Occupations materials to selected individuals for review.

The meeting was adjourned as 11:55 a.m.

Appendix 7 Program Approval Process---Community College Example

CHEMEKETA COMMUNITY COLLEGE
4000 Lancaster Drive N.E.
P.O. Box 14007
Salem, Oregon 97309

PROGRAM APPROVAL PROCESS
(for one-year certificate and associate degree programs)



Instructional Services Division
November 4, 1977

Appendix 8

NEW AND EMERGING OCCUPATIONS: NATIONAL COMPILATION

Titles	Spetz 1980	Orth 1980	Orange County 79	Meleen 1976	Literature Search
1. Podiatric Assistant	yes			yes	
2. Halfway House Resident Manager	yes			yes	
3. Industrial Hygiene Technician	yes			yes	
4. Housing Rehabilitation Specialist	maybe	yes		yes	
5. Solar Energy Technician	yes		yes	no	
6. Laser/Electro-Optics Technician	maybe	yes			
7. Energy Efficiency Technician	maybe			yes	
8. Physician's Assistant	maybe				yes
9. Biomedical Equipment					
10. Industrial Hygiene Technician	yes				
11. Therapeutic Recreation Technician	yes				
12. Swine Confinement Manager	yes				
13. Case Manager for the Mentally Disabled		yes			
14. Public Safety Assistant			yes		
15. Leisure Counselor			yes		
16. Word Processing/Reprographics Specialists			yes		
17. Supervisor, Word Processing			yes		
18. Unit Supervisor, Fast Food Service			yes		
19. Gastroenterology Assist.					yes
20. Tumor Registrar	maybe	yes		no	
21. Child Advocate	no			yes	
22. Horticultural Therapy Aide	no			yes	
23. Nuclear Quality Assurance Inspector	no			yes	
24. Physical Security Technician	no			yes	
25. Public Safety Communications Operator	no			yes	
26. Crystal Manufacturing Tech.	no			yes	
27. Electro-mechanical Technician	no				yes
28. Career Guidance Technician			yes	no	
29. Cardiopulmonary Technician	maybe				
30. Diagnostic Medical Sonographer	maybe				
31. Expanded Function Dental Auxiliary	maybe				
32. Home Health Aide	maybe				
33. Multi-Competency Technician	maybe				
34. Opthalmic Medical Assistant	maybe				
35. Automotive Electronics Tech.	maybe				

Appendix 9

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*Copies available for review at the OOICC Office.